ABSTRACT:

We propose a new system of the multiplexed sensors using a series of fiber Bragg gratings (FBGs), where the gratings separation lengths, Bragg wavelength, dip length, and birefringence can be configured as the sensing information.The transmission spectrum of a dual fiber Bragg gratings has been derived. Value of separation length between two FBGs, dL, is varied from 0.5 to 5.5 cm. The dip of separation length affects the transmission spectrum, which is indicated by the numbers of minimum dip values. Results show that the increasing in the separation length (dip length) between two FBGs leads to the formation of phase shift and increases the number of minimum transmission dip. For the dual FBGs to be used as a Fabry-Perot interferometer, it must have the smallest possible separation length. The multiplexed sensing application of more than two physical parameters can be operated by using such effects, for instance, strain, temperature, and gas sensor is plausible, while the self calibration between them is also available.